

M/EB 349/65
23 September 1965
Copy 1

MEMORANDUM FOR: Chief, Imagery Analysis Division, CIA

THROUGH: Acting Chief, Missiles/Electronics Branch, IAD

FROM:



SUBJECT: Trip Report on Visit to [redacted] Facility
(Consultation on Prototype Light Table)

1. The undersigned was one of a group of three CIA personnel visiting the [redacted] [redacted] for the purpose of advising [redacted] engineers regarding a prototype light table under development.

Personnel making the trip were: [redacted]
[redacted]

2. The light table to be developed will use a light source similar to a television tube which will produce a modulated electron beam. The spot size will be 5/8 inch with a diffuser and 3/16 inch without the diffuser. The modulation of light intensity will be accomplished by the feed-back principal. The speed of the beam-scan and the modulation process will be so great that perfect integration will take place in the mind/eye of the viewing analyst. The purpose of the device is to vary the intensity of the light passing through the transparency, so dense portions receive more light and vice versa, using the same principal used in the [redacted] printer.

3. A wooden mock-up, constructed by [redacted] engineers, was useful during discussions which resulted in a number of suggestions for design improvement. Attachment 1 is an impression of the wooden mock-up seen during this visit. Viewing microscopes were not attached to the wooden mock-up and therefore are not shown.

4. Description and Proposed Use:

a. The central unit (Annotation A) would tilt up to any desired degree, up to approximately 45 degrees. This movement would be motor driven. The viewing turntable (Annotation B) is rotated so the supply spool brackets are adjacent the film load access doors (Annotation E). The roll of film would then be loaded and threaded part way through the viewing area. The

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turntable would again be rotated until the take-up spool was adjacent the access door. The film threading operation would then be completed.

b. An X-Ray safety glass would come down over the viewing area before the unit could be turned on.

c. The film transport would be motor driven and manually controlled.

d. The viewing microscope is to be attached firmly to the central unit, not the viewing turntable.

e. The turntable can be rotated during viewing operations to orientate the film as desired.

f. A small opening (Annotation D) provides direct access to the film for marking purposes without the need to raise the X-Ray protective glass cover on the viewing area.

5. The following suggestions for design improvement were made:

a. The central unit should be capable of erection upward beyond a 45 degree angle to increase viewing comfort for the analyst.

b. Provision be made for loading and driving two rolls of 70 mm film in addition to larger sizes.

c. Provision be made for chipping film. (The engineers believed this could be accomplished by lifting the X-Ray protective glass, inserting a "cutting glass" under the film, which then automatically turns on a non-X-Ray light for the cutting operation.)

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ON CRT

d. Installing elbow rests on the central unit, and provision of a chair which has adjustable height, good body contour, and a back with adjustable position and tension.

e. Provision for handy placement of control knobs.

f. Provision for very fine manual movement of film with finger-tip control.

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g. Provision for two reference lines (with controlable spacing), or a rail for the scope to facilitate systematic search operations.

h. Provision for a magnetized map/photo/collateral board on top of the central unit. This board to be adjustable so it is at right angles to line of sight.

i. Provision for use of a legal size sketch or writing pad to right or left of the viewing area.

j. Provision for the maximum amount of metallic surfaces to permit use of magnets.

k. Provision for side-by-side operation, by placement of electronic equipment units (Annotation F) all to one side and stacked to save space.

l. Use of a high quality zoom monoscopic viewing microscope.

m. Provision for viewing stereo.

n. Design of a cut-down tube magnifier to permit film scan while X-Ray glass covers the film. The tube should have a "frying-pan" handle to permit holding it without smudging eyeglasses.

6. Conclusions and Recommendations:

a. It is believed the light table may find primary applicability for scanning relatively large scale photography (due to the large spot size of the electron beam). However, its usefulness in viewing smaller scale material should be investigated. This is the reason a suggestion regarding use of 70 mm film was made. The requirement for stereo viewing must be recognized in the design of any light table.

b. The relatively large spot size of the equipment now under development will provide some image enhancement and prevent eye strain when viewing areas with high contrast and widely varying surface reflectivity, however, it is believed that fiber optics may provide a much greater step forward in the improvement of photo analysis capability, through the use of

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a much smaller spot size. At the present time, the photo analyst is faced with the problem of unconscious density integration where density changes are very subtle and close together. Isodensity traces are being produced in an attempt to get additional intelligence information out of the material, but the isodensity trace technique requires much advancement before it becomes widely used. The time presently required to produce a trace and then to interpret the resulting patterns is a big drawback. The development of a modulated light source to amplify/modulate the subtle density difference, using fingertip control, might provide the means for increasing analysis capability equivalent to a substantial increase in system ground resolution.

c. There is a lack of unanimity among photo analysts regarding the relative quality of the [REDACTED] Zoom 70 equipment, compared with the [REDACTED] [REDACTED] states that the P.I.'s in PAG did not like the [REDACTED] and preferred the [REDACTED] Zoom 70. The opposite is true in IAD. For monoscopic viewing, we feel the [REDACTED] is superior to the Zoom 70, and it is an ideal companion to the new [REDACTED] High Power Stereoviewer, commonly referred to as the "Dynazoom." The [REDACTED] has a superior zoom mechanism, a higher magnification capability, and superior light systems to that of available [REDACTED] Zoom 70 equipment. It is recommended that an objective and scientific test of optical quality be made to determine which of the two has better lens systems.

Equipment used in future P.I. equipment should be of the highest quality, and there should be no compromise on this score.

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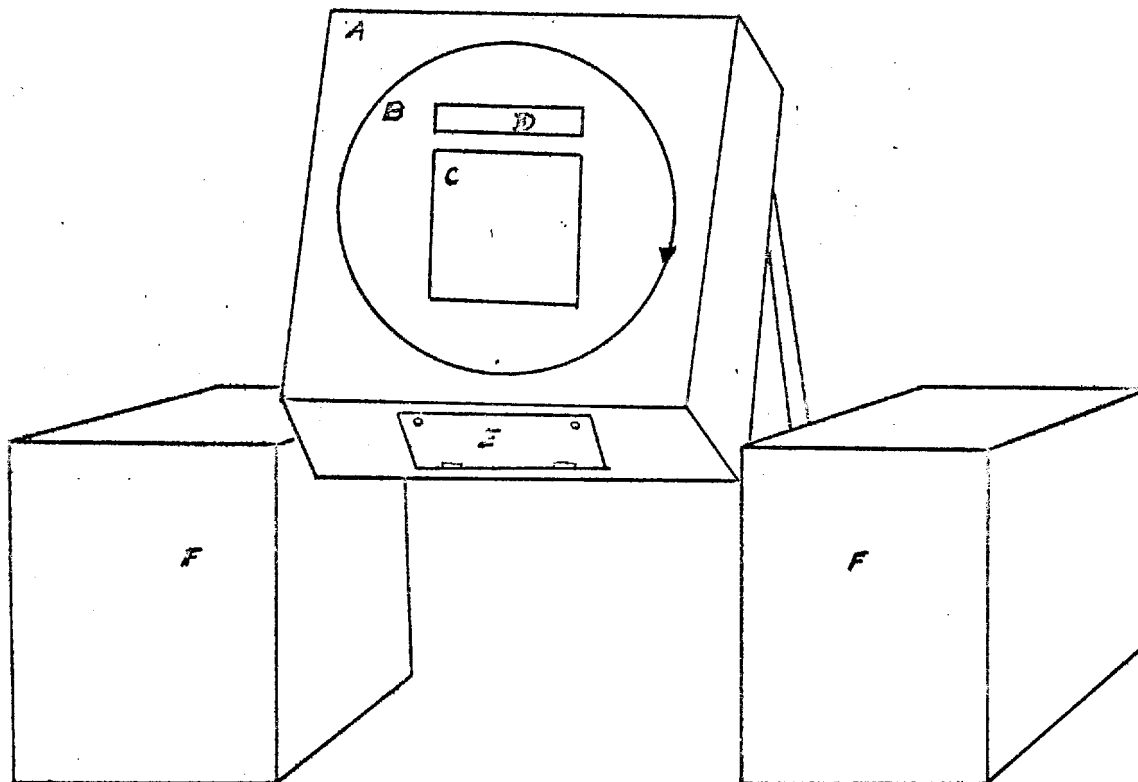
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IMPRESSION OF THE ☐ ELECTRON BEAM MODULATED LIGHT PROTOTYPE FILM VIEWER
(As seen at ☐ on 15 Sep 65)

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LEGEND

- A - Viewing unit. Elevation angle adjustable/motor driven.
- B - Viewing unit turntable with 360 degree swivel
- C - Viewing area covered with X-ray protective glass.
- D - Opening to permit marking film.
- E - Film loading access doors.
- F - Electronic Equipment.

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(When Filled In)

SPEED LETTER		REPLY REQUESTED		DATE
		<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO	3-17-67
TO : NPIC /		FROM: CSS / Po / 02		
ATTN: [REDACTED]		[REDACTED]		
<p>RD-94, TO-36</p> <p>Here is report of search on invention in Video Feedback System for Enhancing Fine Detail. In view of unfavorable recommendation we will take no further action unless we hear from you.</p>				
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[REDACTED]				SIGNATURE
REPLY				DATE
[REDACTED]				
				SIGNATURE

10 MAR 1967

JAGP

[redacted]
Assistant General Counsel
Central Intelligence Agency
Washington, D. C. 20505

Re: Patentability of a "Video Feedback System
for Enhancing Fine Detail" [redacted]

[redacted]
Pursuant to your request, this office has conducted a novelty search for the subject disclosure. The disclosure uses a mixture of fast (UV) phosphors with slow bright phosphors such as P-4 on the face of a 3 inch kinescope with a fiber optic face plate. A wide band delay line is used to augment the system delay to allow time to scan each line twice. This arrangement increases the detail contrast over a small area. The UV and P-4 phosphors have already been developed by another [redacted] Pennsylvania. Accordingly, no novelty can be claimed in their use in this disclosure.

A search of the delay line system was made in the United States Patent Office in Class 178, subclasses 7.1 through 7.8.

The following patents, copies inclosed, one of interest:

Patent No.	Inventor	Date Issued	Class/subclass
2,929,870	W. G. Gibson et al.	Mar 22, 1960	178 7.1
2,971,053	W. G. Gibson	Feb 7, 1961	178 7.1
2,957,042	W. G. Gibson et al.	Oct 18, 1960	178 7.1

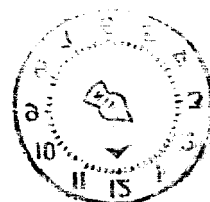
The Gibson (870) patent teaches the technique of delaying the video signal for that time required to scan two lines.

In view of the foregoing this office does not recommend the filing of an application.

Sincerely yours,
Signed

4 Incl
1. Invention disclosure
2-4. Patents listed

[redacted]
Lt Colonel, JAGC
Chief, Patents Division



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